



# BROWARD COLLEGE COURSE OUTLINE

**LAST REVIEW:** 2008-2009      **NEXT REVIEW:** 2013-2014      **STATUS:** A  
*(i.e. 2003-2004)*      *(i.e. 2008-2009)*      *(A, I, D)*

**COURSE TITLE:** Neonatal Neurosonology

**COMMON COURSE NUMBER:** SON2161

**CREDIT HOURS:** 2

**CONTACT HOUR BREAKDOWN**

*(per 16 week term)*

**CLOCK HOURS:**

*(Voc. Course ONLY)*

Lecture: 32

Lab:

Clinic:

Other:

**PREREQUISITE(S):** SON2400, SON2834

**COREQUISITE(S):** SON2401, SON2844

**PRE/COREQUISITE(S):**

**COURSE DESCRIPTION** *(750 character maximum)*: An introduction to the sonographic imaging of the neonatal and infant brain. Emphasis is placed on normal brain anatomy, congenital and acquired pathological conditions, as well as sonographic scanning techniques.

General Education Requirements – Associate of Arts Degree (AA), meets Area(s): Area

General Education Requirements – Associate in Science Degree (AS), meets Area(s): Area

General Education Requirements – Associate in Applied Science Degree (AAS), meets Area(s): Area

## UNIT TITLES

1. Anatomy and Physiology of the Central Nervous System
2. Technique in Neurosonology
3. Special Concerns with the neonate
4. Pathology and Differential Diagnosis
5. Transcranial Doppler

**ASSESSMENT:**

Please provide a brief description (250 characters maximum) that details how students will be assessed on the course outcomes.  
**Quizzes, Midterm, Final Exam, Attendance is required**

*\*\*\* Complete the following only if course is seeking general education status \*\*\**

**GENERAL EDUCATION Competencies and Skills\*:**

Please highlight in green font all Competencies/Skills from the list below that apply to this course. In the box to the right of the Competency/Skill, enter all specific learning outcome numbers (i.e. 1.1, 2.7, 5.12) that apply.

<b>1. Read with critical comprehension</b>	
<b>2. Speak and listen effectively</b>	
<b>3. Speak and listen effectively</b>	
<b>4. Think creatively, logically, critically, and reflectively</b> (analyze, synthesize, apply, and evaluate)	
<b>5. Demonstrate and apply literacy in its various forms:</b> (highlight in green ALL that apply) ( 1. technological, 2. informational, 3. mathematical, 4. scientific, 5. cultural, 6. historical, 7. aesthetic and/or 8. environmental )	
<b>6. Apply problem solving techniques to real-world experiences</b>	
<b>7. Apply methods of scientific inquiry</b>	
<b>8. Demonstrate an understanding of the physical and biological environment and how it is impacted by human beings</b>	
<b>9. Demonstrate an understanding of and appreciation for human diversities and commonalities</b>	
<b>10. Collaborate with others to achieve common goals.</b>	
<b>11. Research, synthesize and produce original work</b>	
<b>12. Practice ethical behavior</b>	
<b>13. Demonstrate self-direction and self motivation</b>	
<b>14. Assume responsibility for and understand the impact of personal behaviors on self and society</b>	
<b>15. Contribute to the welfare of the community</b>	

\* General Education Competencies and Skills endorsed by '05-'06 General Education Task Force

**Common Course Number: SON2161**

## **UNITS**

### **Unit 1** Anatomy and Physiology of the Central Nervous System

#### **General Outcome:**

- 1.0 The student shall:** demonstrate understanding of the normal anatomy and physiology of the central nervous system.

#### **Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

- 1.1** Identify the bones of the skull and spinal cord.
- 1.2** Identify the fontanelles and sutures of the neonate.
- 1.3** Identify the major structures of the central nervous system.
- 1.4** Define the function of the major structures of the central nervous system.
- 1.5** Describe the major neurologic pathways of the central nervous system.
- 1.6** Describe the cerebrospinal fluid system.
- 1.7** Identify basic intra and extra cranial vascular structures.

**Common Course Number: SON2161**

## **UNITS**

### **Unit 2** Technique in Neurosonology

#### **General Outcome:**

- 2.0 The student shall:** explain the basic protocol for ultrasound examination of the neonatal head.

#### **Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

- 2.1** Describe the protocol for ultrasound scanning of the neonatal head
- 2.2** Describe the proper equipment and setting for obtaining optimum ultrasound examination of the neonatal head.
- 2.3** Explain what images are required for a neurosonogram.
- 2.4** Identify a normal neurosonogram and determine the scanning plane employed.
- 2.5** Identify the normal anatomic structures and landmarks on a neurosonogram.

**Common Course Number: SON2161**

## **UNITS**

### **Unit 3** Special Concerns with the Neonate

#### **General Outcome:**

- 3.0 The student shall:** explain the special needs of the neonate in regard to an ultrasound examination, including neonates on support apparatus.

#### **Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

- 3.1** List special concerns of neonates.
- 3.2** Explain how the special needs of the neonate can be met during an ultrasound examination.
- 3.3** Describe ECMO
- 3.4** Explain how the need of neonates on ECMO can be handled during an ultrasound examination.
- 3.5** List support equipment frequently encountered in neonatal units.
- 3.6** Describe how neonates on support equipment should be handled during an ultrasound examination.

**Common Course Number: SON2161**

## **UNITS**

### **Unit 4 Pathology and Differential Diagnosis**

#### **General Outcome:**

- 4.0 The student shall:** demonstrate an understanding of the pathophysiological processes of the neonatal central nervous system.

#### **Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

- 4.1** Differentiate between normal and abnormal sonographic appearances and explain the clinical significance and manifestations of the following pathologies of the central nervous system:
- a. Structural defects of the brain and cranium.
  - b. Neonatal intracranial hemorrhage.
  - c. Subdural and subarachnoid hemorrhage.
  - d. Obstruction of the ventricular system and ventricular enlargement.
  - e. Focal lesions of the periventricular white matter.
  - f. Midline structure displacement.
  - g. Inflammatory diseases of the brain.
  - h. Arteriovenous malformations.
  - i. Aneurysm of intracranial vessels.
- 4.2** Differentiate between normal and abnormal sonographic appearances and explain the clinical significance and manifestations of the following pathologies of the spinal cord.
- a. Spina bifida
  - b. Meningocele
  - c. Tethering of the spine

**Common Course Number: SON2161**

## **UNITS**

### **Unit 5** Transcranial Doppler

#### **General Outcome:**

**5.0 The student shall:** explain the basic protocol for a transcranial Doppler examination and normal structures visualized.

#### **Specific Measurable Learning Outcomes:**

**Upon successful completion of this unit, the student shall be able to:**

- 5.1** Describe the protocol for transcranial Doppler examination.
- 5.2** Describe the proper equipment and settings for obtaining optimum transcranial Doppler examination.
- 5.3** Explain what images are required for a transcranial Doppler examination.
- 5.4** Explain the expected normal outcomes of a transcranial Doppler examination.